REMARKS

The amendments filed on 5/31/2005 to the 4th paragraph on page 6 has been objected to under **35 USC 132(a)** on the basis that it introduces new matter into the disclosure.

Applicants, by way of this response, have cancelled the amendments thereby rendering the above objection invalid. However, the 4th paragraph has been amended to clarify that "The substrate is then subjected to sequential dual annealing steps. The first step is a low energy multiple-pulse laser anneal in the sub-melt regime." Applicants submit that the above amendment to specify that the low energy multiple-pulse laser anneal is a clarification which does not add new matter.

Referring to Figure 4, the effect of multiple-pulse laser anneal at 0.2 J/cm^2 on boron concentration profile is shown. As explained on page 4, paragraph 2, the junction depth is approximately 40 nm for the cases with one or more laser pulses being applied and the as-implanted case. As a person skilled in the art would appreciate, the diffusivity of boron in liquid amorphous silicon is 8 times higher than in the solid state. Therefore, if the laser anneal had melted the amorphized silicon layer, the boron dopants would have diffused in the liquid silicon and redistributed within. This diffusion would cause the post-laser anneal B concentration profile to differ from the as-implanted case. It is clear that the laser anneal in the present invention takes place in the sub-melt regime. The above amendment to specification, therefore, does not constitute added material.

The following argument is made to overcome the objections of **Claim Rejection under 35 USC112**.

As stated in 2163(3), possession of the claimed matter may be shown by describing an actual reduction to practice of the claimed invention: The multiple-pulse laser anneal is in the sub-melt regime. Therefore, since the described embodiment shown in Figure 4 of the specification meets all the limitations of the claim, that is, the laser anneal occurs in the sub-melt regime, the criteria of written description is met.

Claim Rejection – 35 USC 103.

The independent claims **1**, **11**, **17**, and **22** have been amended as shown in claim **1** to more clearly distinguish the application over prior art. No new matter has been added by way of these amendments which are supported by page 4, paragraph 3; page 6, paragraph 4-page 7 and Figures 4 and 5.

As discussed on pages 1-2, ion implantation is always followed by annealing. Laser annealing with pre-amorphization implant attempted in prior art gives rise to melting of the poly-Si gate due to high energy fluence used for dopant activation and defect removal.

The present invention however proposes a solution to the problem by having a sequential dual step anneal of source/drain extension (SDE) regions comprising a first low-energy multiple-pulse laser anneal in the sub-melt regime to activate the dopants in the SDE regions followed by

a second rapid thermal anneal (RTA) to heal residual damage and cause the out-diffusion of the dopants. These limitations are not found in the patent by Chong et. al. Laser anneal in Chong is set up so that silicon in the amorphous layer (38, 42 of Fig 24) melts and the implanted ions in the lightly doped S/D junction diffuse into the amorphous layer to form SDE. Laser annealing is therefore not done in the sub-melt regime as required by claim **1** of the application.

Downey's patent, cited by the examiner, deals with the formation of a dielectric film, a metal film or a salicide film with no mention of SDE junctions. Further, Downey's sub-melt processing prevents dopants from diffusing from an overlying surface layer into a substrate.

The combination of Chang's and Downey's patents do not disclose an important feature of the application as stated in claim **1**: a second rapid thermal anneal to heal residual damage from the ion implantation and cause the out-diffusion of the dopants in the SDE regions to yield shallower junctions than the just-implanted SDE.

In view of these remarks, independent claims **1**, **11**, **17**, and **22** are believed to be allowable under **35 USC. 103** based on Chong in view of Downey. Accordingly, the remaining claims which are dependent upon these independent claims are also believed to be allowable.

Yamazaki in his patent discloses that a high carrier mobility for an amorphous semi-conductor film can be obtained by melting the film by irradiating with a laser beam and then re-crystallizing the molten amorphous film. Yamazaki thus teaches away from Downey's sub-melt laser processing which is required in Downey's patent to achieve high mobility.

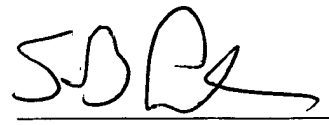
Accordingly claims **8**, **14**, **19**, **22-24**, and **26** are also believed to be allowable under **35 USC 103(a)** as being patentable over Chong in view of Downey and Yamazaki.

Talwar's patent, as in the case of Yamazaki, also teaches away from Chong's patent in that melting of the amorphous layer by laser irradiation is used to form reduced dimension FET device. Accordingly claims **9**, **15**, **20**, and **25** are believed to be allowable as being patentable under **35 USC 103(a)**.

Independent claims **1**, **11**, **17**, and **22** and dependent claims **2-5**, **8**, **10**, **11**, **14**, **19**, and **25** have been amended to overcome the Examiner's rejections and objections, and are now believed to be in condition for allowance and allowance is so requested.

It is requested that should there be any problem with this Amendment, please call the undersigned Attorney at (845) 452-5863.

Respectfully submitted,



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